

# Introduction to Nuclear Power: Opposing Viewpoints

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*Nuclear Power, 2013*

"I'd like to have a society work without nuclear as early as possible.... But as to in reality how quickly it can be reduced or whether it will ultimately be reduced to zero—I want to judge based on discussion by experts." Yukio Edano, energy minister, Japan

On March 11, 2011, disaster struck in Japan. A 9.0 magnitude earthquake shook the country, unleashing a massive tsunami that flooded the coast and leveled everything in its path. Aftershocks rumbled through the islands, fires sprang up, and an explosion at the Fukushima Daiichi Nuclear Power Plant sent shock waves of fear around the world that still reverberate. The earthquake and tsunami caused a series of power outages and equipment failures, which in turn caused a series of nuclear meltdowns in three of six reactors at Daiichi. Radiation was released, and the area had to be evacuated. The Fukushima disaster was categorized as a Level 7 on the International Nuclear Events Scale, the highest level possible.

The Fukushima disaster reignited an age-old controversy over nuclear power: Should nuclear fission reactors be used to generate electricity for civilian purposes? On the international stage, opinions oscillate between two extremes.

Two weeks after the disaster in Japan, on March 26, 2011, more than 250,000 Germans marched the streets carrying slogans such as "Heed Fukushima—shut off all nuclear plants." Citing safety concerns with aging nuclear plants, Germany took its eight oldest reactors offline only weeks after Fukushima, and two months later, on May 30, 2011, Chancellor Angela Merkel announced that the country would phase out nuclear power and shut down the remaining nine reactors by 2022. This set in motion a huge shift in the country's energy policy. Germany will have to invest heavily in renewable energies to guarantee the necessary power supply *without* reverting to the use of fossil fuels.

Citing national energy independence and security, as well as an obligation to reducing greenhouse gas emissions, France has no plans to phase out nuclear power, which provides more than 75 percent of the country's electricity. Instead, the government under President Nicolas Sarkozy has renewed its commitment to this energy sector and ordered the inspection of all its nuclear power facilities to evaluate the potential risks involved in case of natural disasters, accidents, or human failures and to develop improvements in safety and security procedures.

And what about Japan? According to the *New York Times's* Martin Fackler: "All but two of ... 54 commercial reactors have gone offline since the nuclear disaster a year ago [2011], after the earthquake and tsunami, and it is not clear when they can be restarted. With the last operating reactor scheduled to be idled as soon as next month [April 2012], Japan—once one of the world's leaders in atomic energy—will have at least temporarily shut down an industry that once generated a third of its electricity." Nevertheless, the Japanese government has renewed its commitment to nuclear power, albeit with a caveat: "We cannot say yes to restarts until we are certain that they are absolutely safe," explains Shiga Prefecture Governor Yukiko Kada, and Energy Minister Yukio Edano would prefer to end the country's reliance on nuclear

power, but admits that this might be unrealistic in the near future.

Amidst the safety concerns highlighted by the Fukushima disaster, the nuclear debate in the United States has become more contentious. Proponents of nuclear power such as Charles Ferguson in *Nature* argue that "phasing out nuclear power worldwide would be an overreaction. It provides about 15 percent of global electricity and even larger percentages in certain countries, such as France (almost 80 percent) and the United States (about 20 percent). Eliminating nuclear power would lead to much greater use of fossil fuels, and raise greenhouse-gas emissions. It will probably take at least a few decades to massively scale up use of renewable sources. Meanwhile, nuclear plants can bridge the energy gap." Mitch Singer from the Nuclear Energy Institute argues a similar point: "There are plenty of studies showing that nuclear is key in providing baseload power.... Wind and solar are so variable they really present a problem when you put that much on the grid."

Consequently, the Barack Obama administration's 2012 budget proposes to advance both renewable energy sources as well as the next generation of nuclear power plants. As Rocky Barker reports in *Voices*: "[The] Department of Energy ... will set up cost-sharing agreements with private industry to design and license small modular nuclear reactors.... These reactors would be one-third the size of current nuclear plants and be designed with inherent safety, siting, construction and economic benefits." While nuclear power might pose safety risks, its proponents argue it needs to be part of the energy mix of the future, because in contrast to the chief alternative of fossil fuel, it produces virtually no air pollution and is therefore the only viable energy source that can provide reliable national energy independence while not contributing to global warming.

Opponents of nuclear power contradict the claim that nuclear power is environmentally friendly by pointing to the entire nuclear fuel chain, which includes uranium mining, the long process of decommissioning nuclear plants and the unresolved issue of nuclear waste storage. Small modular reactors such as those supported by the Obama administration would still grapple with these issues. Therefore opponents of nuclear power favor a complete phase-out, citing the need to transform the national energy system to sustainable energy sources. Timeforchange.org, an environmental protection group, argues that if the United States relies on nuclear energy, such a transformation will never take place. "We cannot on one hand decide to continue nuclear power to generate electricity and on the other hand expect alternatives to be developed."

The authors in *Opposing Viewpoints: Nuclear Power* take a close look at the safety, environmental, and financial concerns that characterize the nuclear debate in the following chapters: Can the Risks Involved in Nuclear Power Be Managed?, Is Nuclear Power Good for the Environment?, and Is Nuclear Power an Economical Source of Energy?

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## Further Readings

### Books

- John P. Banks and Charles K. Ebinger, eds. *Business and Nonproliferation: Industry's Role in Safeguarding a Nuclear Renaissance*. Washington, DC: Brookings Institution Press, 2011.
- David Bodansky *Nuclear Energy: Principles, Practices, and Prospects*. New York: Springer, 2008.
- Helen Caldicott *Nuclear Power Is Not the Answer*. New York: New Press, 2007.

- Martin Cohen *The Doomsday Machine: The High Price of Nuclear Energy, the World's Most Dangerous Fuel*. New York: Palgrave Macmillan, 2012.
- Stephanie Cooke *In Mortal Hands: A Cautionary History of the Nuclear Age*. London: Bloomsbury, 2009.
- Gwyneth Cravens and Richard Rhodes *Power to Save the World: The Truth About Nuclear Energy*. London: Vintage, 2008.
- Pete V. Domenici *A Brighter Tomorrow: Fulfilling the Promise of Nuclear Energy*. Lanham, MD: Rowman & Littlefield, 2007.
- Charles D. Ferguson *Nuclear Energy: What Everyone Needs to Know*. New York: Oxford University Press, 2011.
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- Juan José Gomez Cadenas *The Nuclear Environmentalist: Is There a Green Road to Nuclear Energy?* New York: Springer, 2012.
- Gabrielle Hecht *Being Nuclear: Africans and the Global Uranium Trade*. Cambridge, MA: MIT Press, 2012.
- Alan M. Herbst and George W. Hopley *Nuclear Energy Now: Why the Time Has Come for the World's Most Misunderstood Energy Source*. Hoboken, NJ: Wiley, 2007.
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- Eric Jeffs *Greener Energy Systems: Energy Production Technologies with Minimal Environmental Impact*. Boca Raton, FL: CRC Press, 2012.
- Maggie Koerth-Baker *Before the Lights Go Out: Conquering the Energy Crisis Before It Conquers Us*. Hoboken, NJ: Wiley, 2012.
- Jay H. Lehr *Nuclear Energy Encyclopedia: Science, Technology, and Applications*. Hoboken, NJ: Wiley, 2011.
- James A. Mahaffey *Atomic Awakening: A New Look at the History and Future of Nuclear Power*. Trenton, TX: Pegasus, 2009.
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- Richard Martin *SuperFuel: Thorium, the Green Energy Source for the Future*. New York: Palgrave Macmillan, 2012.
- Ewan McLeish *The Pros and Cons of Nuclear Power*. New York: Rosen Central, 2007.
- Laura Nader, ed. *The Energy Reader*. Hoboken, NJ: Wiley-Blackwell, 2010.
- Reese Palley *The Answer: Why Only Inherently Safe, Mini Nuclear Power Plants Can Save Our World*. New York: Quantuck Lane Press, 2011.
- Christine Shrader-Frechette *What Will Work: Fighting Climate Change with Renewable Energy, Not Nuclear Power (Environmental Science and Ethics Policy)*. New York: Oxford University Press, 2011.
- Neil Singer *Wonders of Nuclear Fusion: Creating an Ultimate Energy Source*. Albuquerque: University of New Mexico Press, 2011.
- Brice Smith *Insurmountable Risks: The Dangers of Using Nuclear Power to Combat Global Climate Change*. Muskegon, MI: RDR Books, 2006.

- Benjamin K. Sovacool and Scott Victor Valentine *Contesting the Future of Nuclear Power: A Critical Global Assessment of Atomic Energy*. Singapore: World Scientific Publishing Company, 2011.
- Benjamin K. Sovacool and Scott Victor Valentine *The National Politics of Nuclear Power: Economics, Security and Governance*. London: Routledge, 2012.
- Frank R. Spellman and Melissa L. Stoudt *Nuclear Infrastructure Protection and Homeland Security*. Lanham, MD: Government Institutes, 2011.
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